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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/083,385

02/27/2002

Satoshi Hirahara

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EXAMINER

VO, HAI

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

02/19/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/083,385	<b>Applicant(s)</b> HIRAHARA ET AL.	
	<b>Examiner</b> Hai Vo	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 49-82 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49-82 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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1. The art rejections over Lisowsky (US 5,858,511) are maintained.
2. The art rejections over Fiala et al (US 5,895,716) have been withdrawn in view of the present amendment. Fiala discloses a conductive carbonaceous fiber fabric comprising a binder in an amount of 10 to 30 wt% (column 2, lines 29-30). Fiala does not teach the binder present in the amount set forth in the claim.
3. The art rejections over Muraki et al (US 5,599,612) in view of Suzuki (US 5,439,746) withdrawn in the Office Action mailed 04/21/2004 will be maintained in this office Action in light of the present amendment.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 49-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 49 recites the limitation "the fabric" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Similarly, claims 62-64 recite the limitation "the point contact" in line 2. There is insufficient antecedent basis for this limitation in each claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 49-53, 55-60, 62-64, 66-72, and 74-82 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lisowsky (US 5,858,511). Lisowsky discloses a conductive carbonaceous fiber fabric having a thickness of 0.001 to 0.1 in (column 3, lines 45-50; and column 4, lines 9-11). Carbonaceous fibers are axially oriented to one another as shown in figure 1. The fabric comprises a binder in an amount of 5 to 15 wt% (column 4, lines 60-64). Lisowsky discloses the fabric being coated with a dispersion of the polymeric material such as phenolic in a diluent (column 4, lines 45-65). Likewise, the thermoset precursors are present as fine particles in the dispersion solution. The coating is applied by spraying (column 4, lines 35-37). Since Lisowsky uses the same binders (thermosetting resins) and the same coating techniques to form the coated carbonaceous fiber fabric as Applicants, it is not seen that the binder could not have been present discontinuously as particles at the point contact between the fibers. It appears that Lisowsky was using the same materials and the same technique to form the carbonaceous fiber fabric as Applicants. The carbonaceous fiber fabric comprises a binder present in a very small amount to bond

the woven fabric materials together at a multiplicity of bonding sites. The binder is applied to the fabric material by spraying and present in an amount within the claimed range. The coated carbonaceous fiber fabric has a thickness within the claimed range. Therefore, it is the examiner's position that a bending resistance, an in-plane volume resistivity, a gas permeability, a degree of fluffing, basis weight would be inherently present as like material has like property. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete (Note discussion found in *Ex parte Slob*, 157 USPQ 172). This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It has been held that a recitation with respect to the manner in which a claimed carbonaceous fiber fabric is intended to be employed does not differentiate the claimed carbonaceous fiber fabric from a prior art friction material satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Accordingly, Lisowsky anticipates or strongly suggests the claimed subject matter.

9. Claims 54, 61, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lisowsky (US 5,858,511) as applied to claim 49 above, in view of Winckler (US 5,662,993). Lisowsky discloses a carbon composite material suitable as a friction material. Lisowsky does not specifically disclose a diameter of the fiber and carbonaceous fibers being twisted yarns. Winckler, however, teaches a carbon composite material suitable as a friction material comprising a woven fabric consisting of carbon based fibers spun into bundles and the bundles twisted into

strands. Winckler teaches the fibers having an average fiber of 6 to 12 microns (column 5, lines 55-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the carbonaceous fiber comprising twisted yarns as described by Winckler motivated by the desire to control oil flow while retaining structural integrity and balancing other properties of the friction material (see column 5, lines 50-60 of Winckler). It appears that the carbon composite article of Lisowsky as modified by Winckler are a woven fabric composed of carbonaceous fibers having an average fiber diameter within the claimed range and the contact points of the fibers are bonded together by a binder resin. Lisowsky was using the same materials and the same technique to form the carbonaceous fiber fabric as Applicants. The carbonaceous fiber fabric comprises a binder present in a very small amount to bond the woven fabric materials together at a multiplicity of bonding sites. The binder is applied to the fabric material by spraying and present in an amount within the claimed range. The coated carbonaceous fiber fabric has a thickness within the claimed range. Therefore, it is the examiner's position that the point contact would be inherently present in the range instantly claimed.

10. Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lisowsky (US 5,858,511) as applied to claim 49 above, in view of Mitchell et al (US 4,396,663). Lisowsky discloses a carbon composite material comprising a binder in an amount of from 0.01 to 4% by weight based on the weight of the carbon composite material. Therefore, it is necessary and thus obvious for the skilled

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artisan to look to the prior art for the suitable content of the binder used in frictional applications. Mitchell, teaches a carbon composite material suitable as a friction material comprising a binder in an amount of from 0.5 to 15% by weight based on the weight of the carbon composite material. This is overlapping with the claimed range. Therefore, in an absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply an organic binder in a small amount down to 0.5 wt% to the carbon fibers without totally encapsulating the fibrous mass motivated by the desire to eliminate the microcracking and delamination associated with fully encapsulated resin bonded structures during subsequent carbonization processing steps.

11. The art rejections based on Lisowsky have been maintained for the following reasons. Applicants argue that Lisowsky fails to teach or suggest the content of the fiber set forth by the claims. The examiner respectfully disagrees. Applicants' attention is directed to column 4, lines 60-64. The woven fabric comprises a binder in an amount of 5 to 15 wt% which is within the claimed range. Accordingly, the art rejections are sustained.

12. Claims 48-60, 63, and 65-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of Suzuki (US 5,439,746). Muraki teaches a woven carbon fiber fabric used in golf clubs having a bending resistance of 7mm to 12mm (column 7, lines 40- 45) and a unit weight from 120 to 250 g/m<sup>2</sup> (column 5, line 15) within the claimed ranges. Muraki teaches the woven carbon fiber fabric obtained by weaving carbon fiber bundles into two-dimensional

woven fabric (column 2, lines 55-60). The fibers bonded to one another by an epoxy resin binder in an amount of 1.8 wt% based on the weight of the woven fabric (column 2, lines 10-12, and column 3, lines 18-22, example 2). Muraki does not specifically disclose a thickness of the woven fabric. Suzuki teaches a golf club shaft comprising a carbon fiber that is impregnated with an epoxy resin (abstract). Suzuki teaches the woven fabric having a thickness of 200 microns or 0.2 mm (column 14, line 28). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the woven fabric having a thickness as taught by Suzuki because such is a typical thickness of a woven fabric for forming the golf club shaft and Suzuki provides necessary details to practice the invention of Muraki. It appears that the woven fabric of Muraki as modified by Suzuki meets all the structural limitations and chemistry as required by the claims. Therefore, it is not seen that the volume resistivity, air permeability, and degree of fluffing could not be inherently present as like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It has been held that a recitation with respect to the manner in which a claimed carbonaceous fiber fabric is intended to be employed does not differentiate the claimed carbonaceous fiber fabric from a prior art friction material satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Muraki does not specifically disclose an average diameter of the carbon fiber. Suzuki teaches the woven fabric comprising the carbon fiber having a diameter of 7



microns (column 14, line 52). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the carbon fiber having a diameter instantly claimed motivated by the desire to provide improved tensile modulus to the composite structure.

Muraki does not specifically disclose the carbon fiber comprising a carbonization of acrylic fibers. Suzuki teaches the carbon fibers being a product of pitch-series carbon fiber (column 12, line 48). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the pitch-series carbon fiber forming a woven fabric of Muraki because such is an intended use of the material and Suzuki provides necessary details to practice the invention of Muraki.

13. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of Suzuki (US 5,439,746) as applied to claim 49 above, further in view of Holzl et al (US 4,716,064). Muraki does not specifically disclose the carbon fibers comprising twisted yarns. Holzl, however, teaches a composite structure for use in aircraft industry comprising carbon fibers that are woven or otherwise twisted together (figures 2a-2d). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the carbon fibers in the form of twisted yarn for the woven fibers since twisted yarns and woven fibers have been shown in the art to be recognized equivalent forms of the carbon fibers for use in aircraft industry.

### ***Conclusion***

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai Vo/  
Hai Vo  
Primary Examiner, Art Unit 1794